

Chapter 3

Geospatial Technologies and USACE Program/Project Management Business Process

3-1 Purpose

The purpose of this chapter is to give specific guidance on how geospatial technologies play in the Program/Project Management Business Process (PMBP) and how the PMBP can be applied to Enterprise GIS. General guidance covering the PMBP can be found in ER 5-1-11.

3-2 Definitions

PMBProcess (PMBP) – The fundamental USACE business process used to deliver quality projects and services, to include support services provided within USACE, is the Project PMBP. The PMBP applies to planning, development, and management of programs as well as projects, and is used at all echelons of USACE.

Project Delivery Team (PDT) - the heart of the PMBP is the PDT. USACE draws on its diverse resources to assemble strong multi-disciplined PDT's that are unlimited by geographic or organizational boundaries. The PDT is responsible and accountable for delivering a quality project to the customer.

PM Plan (PMP) – a roadmap for quality project delivery. The PMP helps the PDT maintain a constant focus toward project delivery and customers' needs, wants and expectations.

Geospatial Program Management Team – A cross cutting group of technical experts that guide the Command in the implementation of Geospatial Technologies.

3-3 Applications and Analysis

- a. *General Applications and Analysis.* Geospatial Data and Systems are successful when they are implemented in a way consistent with a corporate approach and meet the needs of users. The role that GD&S plays in project execution can be minimal or significant, depending upon the project. Alternatives analysis is a required part of most projects. GD&S is a tool that can support the alternatives analysis, as well as help illustrate existing conditions. For regional or watershed projects, GD&S are the cornerstone for integrating the projects science and engineering data. The use of spatial analysis in the projects planning process is important, because it allows for more "what if" scenarios to be explored inexpensively. Using GD&S throughout the cycle of a project has the potential to:
 - Access and integrate more data
 - Support better and more defensible decisions
 - Result in a stronger study
 - Support environmental assessments
- b. *Examples of using Geospatial Technologies to support Corps traditional work.* USACE has a great diversity of GD&S applications including Wetlands Permitting and Analysis, Environmental Restoration, Resource Management, Habitat Analyses, Environmental Change Detection, Aquatic Plant Tracking, Historical Preservation, Hydrology and Hydraulics, Channel/Inland Waterways Maintenance, Emergency Response, Flood Plain Mapping, Real Estate/Cadastral, Master Planning, District/Construction Management, Socio-economic Analysis, and Geologic/Geomorphic Analysis. These applications support both the USACE civil and military missions. These applications emphasize providing access to geospatial data and rendering the data into information through:

(1) quantitative and qualitative analyses, and (2) visual products. Through spatial analysis GD&S is a powerful decision support tool.

- c. *District GD&S Application Categories.* GD&S at the District level is employed for geospatial data analysis in support of USACE projects. Numerous District level data sets are geospatial in nature and are best accessed and managed by using GD&S technologies. Among the means of access are visualization, spatial query and spatial analysis geospatial data integration. These technologies support basic analysis and can provide modeling support. The result is a focusing of resources to support both quantitative and qualitative decision making in the District mission areas and the preparation of decision support materials for the Division and Headquarters.
- d. *Division and Headquarters GD&S Application Categories.* GD&S at the Division and Headquarters level is typically a business information system that can access and display information spatially; such as, the Digital Project Notebook.
- e. *Laboratory GD&S Application Categories.* GD&S at the laboratory level is complex with many unique analysis and modeling applications in a variety of advanced research areas and for project support to districts. Advanced GD&S projects at USACE Laboratories include terrain visualization, modeling and simulation of environmental phenomena, model integration, hyper-spectral analysis of imagery to support change detection, data dissemination using internet technology, and applications research. Through the Civil Works Geospatial Research and Development program, District needs as well strategic GD&S issues are addressed.
- f. *Sample GD&S.* There are many application areas for GD&S in USACE. As mentioned, GD&S can be applied to each mission area the Corps executes. There is a clearinghouse of Corps projects for GIS located at <http://www.nwww.usace.army.mil/apps/tscwrc/>. This site documents the use of GIS for various projects throughout the Corps.

3-4 The Role of Geospatial Technologies in the PMBP Project Delivery Team (PDT)

NOTE: WE NEED TO BETTER DEFINE THE ROLE OF GD&S with RESPECT TO EACH PHASE.

Although there is little mention of the use of scientific and engineering technologies in the PMBP or in the USACE Project Management Plan (PMP), it can be assumed that since the business of the Corps is science and engineering, the associated technologies are part of the PMBP. The use of Geospatial Technologies in a program/project needs to be addressed throughout the life of the project. Further, Geospatial Technologies need to play a key role in the project.

It is important to have the geospatial expertise at the program/project initiation phase to determine how large of a role geospatial technologies will play in the entire program/project (See Figure 4). If geospatial technology is to play a significant role, there is requirement for a geospatial expert to be on the Project Delivery Team (PDT). The responsibility of the PDT geospatial team member is to:

- 1) Educate PMs, PDTs on which they serve, and the District in general
- 2) Identify geospatial data requirements of the project and ensuring that guidelines outlined in Chapter 7 are followed for using existing data and for collecting new data (metadata, standards, etc.)
- 3) Identify geospatial application and model requirements needed for the project. If geospatial technology application needs to be developed, development needs to follow guidelines outlined in Chapt 6
- 4) Ensure that the specific PMP includes a component for managing geospatial data that includes costs and specific deliverables.

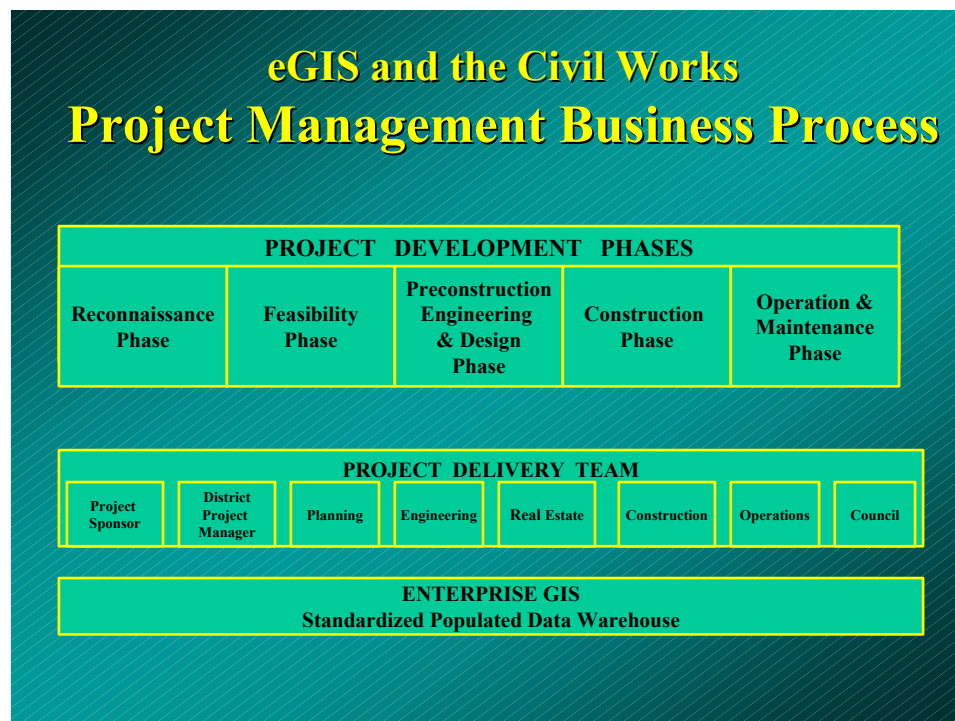


Figure 4: The PMBP and Enterprise GIS.

Project resources required depend upon whether data and tools already exist. Environmental and planning studies typically require small scale data and can utilize public domain data or data the Corps licenses. Construction and Engineering projects typically require large scale data that needs to be collected. Regional studies require both large and small scale data that is integrated with non geospatial data.

Civil works projects that cover large spatial areas requires organized coordination specifically related to collection and mapping activities. For example, the Comprehensive Everglades Restoration Plan (CERP) is a civil works environmental restoration project that covers a spatial area of 18,000 square miles. The data collection and mapping requirements involve federal, state, and local agencies. In order to coordinate, avoid duplication of effort, make spatial data available to diverse users, and comply with state and federal law, a Data Management Plan was established as part of the overall CERP. The Everglades Restoration Data Management Plan addresses such issues as spatial data standards (GIS, surveying, mappings, CADD) to ensure that geospatial data collected for CERP meets the needs of all CERP members. Members from Jacksonville District, as well as representatives from federal and state agencies developed the Everglades Restoration Data Management Plan. The CERP Data Management Plan is an example of a applying the PMBP to geospatial data management in support of a civil works project. The CERP Data Management Plan can be found at http://www.evergladesplan.org/pm/progr_data_mgmt_plan.cfm.

It is important that when Data Management Plans are developed the Project Review Board (PRB) and high levels within other agencies approve it. PRB support and involvement is critical throughout for the success of Data Management activities and ultimately the overall project.

3-5 Applying the PMBP to Enterprise GIS

Enterprise GIS (EGIS) is a change in the way USACE has traditionally collected and accessed geospatial data for mission and project support. The concept of Enterprise GIS is to not only collect/purchase data to support a specific project or mission, but also collect/purchase the data to support USACE's entire mission and data reuse. (See Chapter 2).

If a Command commits to implementing Enterprise GIS, a EGIS Project Delivery Team needs to be established by the Command's Geospatial Program Management Team (See Chapter 4). The EGIS PDT is responsible for developing and executing the EGIS Project Management Business Plan (PMBP) (See Chapter 4).

3-6 Required Elements